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Service and system enhancements for TDMA digital cellular systems

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This paper appears in: **Personal Communications, IEEE** [see also **IEEE Wireless Communications Letters**]

Publication Date: June 1999

Volume: 6, Issue: 3

On page(s): 20 - 33

ISSN: 1070-9916

CODEN: IPCME7

INSPEC Accession Number: 6296010

Digital Object Identifier: 10.1109/98.772975

Posted online: 2002-08-06 22:32:38.0

Abstract

Throughout 1998, the TDMA community investigated and defined an enhanced suite of services for TIA/EIA-136 while also improving its basic system capabilities. These enhancements, named 136+, provide improved voice quality, increased capacity, higher data rates, and improved system engineering. The enhancements are obtained by introducing a new modulation and slot formats, and the addition of several new interleaving and coding options. As a result, the system supports a new vocoder mode, the GSM enhanced full-rate (US1) for improved fidelity at the IS-641 vocoder mode with a 4 dB BER enhancement on the IS-136 downlink, and a new channel capable of providing usable data rates of 14.4, 28.8, or 43.2 kbit/s on a full-rate, double full-rate channel, respectively. The packet data service is truly evolutionary in nature, having a new control layer with a network layer very similar to that used for the existing digital control channels, maximizes commonalities among TDMA technologies, using identical higher layers and the general packet radio service specified in GSM. Furthermore, by using a concept known as TIA/EIA-136 messages through the GPRS network elements, the existing features are maintained. This article provides an overview of these 136+ applications, as well as the improvements, such as the ability to support six voice users per 30 kHz (IDMA6), downlink fast power control.

Index Terms

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Author Keywords

Not Available

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